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THE WORLD BANK'S LIVING STANDARDS MEASUREMENT STUDY (LSMS) PROGRAM

(Contributed by the World Bank)

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I. INTRODUCTION

1. In the 1970s governments, development agencies and other members of the development community became increasingly interested in the following question: Does economic growth in developing countries significantly raise living standards, especially those of the poor? This question was often difficult to answer due to lack of reliable data for assessing the distributional impact of macroeconomic development policies. Even in countries with well functioning statistical systems, with a flow of data from ongoing sample surveys of households, it was not possible to assemble relevant data to address research and policy concerns. In most developing countries, household surveys were, and continue to be, designed to collect data on a topic by topic basis. Integration of results from such single topic surveys is difficult given differences in sample sizes, underlying concepts, reference periods, geographical coverage, etc. Additionally, timely availability of data from sample surveys of households was not commonly the case as data processing constraints affected timelines. In brief, the demand for data was not matched by supply. It was against this background that the Bank initiated an effort to establish data collection systems in developing countries that would rapidly collect and disseminate information on socio-economic conditions.

2. Emphasis was placed on data that would bear directly on current policy issues, rather than on the measurement of living conditions per se. The activities stimulated and implemented by the project launched by the Bank were threefold: 1. Collection of high quality data from specially designed integrated household surveys; 2. Rapid publication of general descriptive data for immediate use by policy makers; 3. Analysis of the data to address specific policy issues. This third aspect was to go beyond measurement and employed regorous economic and statistical techniques to analyze household and individual behaviour with special emphasis on how that behaviour is affected by government policies. The design of household surveys to be canvassed was such that the data would be particularly suited for the analysis of a variety of important policy issues, including distributional and poverty questions such as the effect of macroeconomic development policies on the poor.

3. The second major objective was to strengthen national capabilities to conduct household surveys that generate high quality, policy relevant data in a timely and cost-effective manner. It was in this context that the Bank launched the Living Standards Measurement Study (LSMS) program.

4. The need for comprehensive data for purposes of policy formulation, evaluation and for decision making transcends particular countries or geographic regions. That need is greatest in countries of Sub-Saharan Africa.

5. In the context of the Bank's dual role as a development institution, and as the international agency most concerned with assisting member countries through financial programs and providing macroeconomic and sector specific advice, analysis of country situations is an important dimension of its work. The Bank's role is particularly critical in countries of Sub-Saharan Africa where since the beginning of the eighties, a growing number of countries have embarked on structural adjustment programs aimed at stabilizing the economy in the short to medium term while creating the conditions for a resumption of self-sustained growth over the longer term. While the first structural adjustment programs largely focused on the objectives of restoring macroeconomic equilibria and of reducing incentives distortions, there is now a growing concern among Governments in the Region, within the Bank and generally within the international donor community about the social implications of the structural adjustment process.

6. A major concern relates to the transitional cost of adjustment for vulnerable groups, in particular the reduction in income, employment and access to social services which is generally experienced in the intervening period when the contractional impact of demand management policies outweighs the expansionary effect from policies directly stimulating economic activity. A second concern relates to the longer-term social implications of the structural adjustment process, in particular the need to foster the participation of the poor in the process of economic growth by increasing their access to employment opportunities and income-generating assets, and raising the productivity of their assets, both physical and human.

7. In most countries of Sub-Saharan Africa, however, the limited availability of reliable data on income distribution and welfare indicators, the limited capability to carry out quantitative and qualitative assessments of the evolution of social conditions and the relative weakness of institutions in charge of macroeconomic management and co-ordination make it particularly difficult to turn these concerns into operational policies and programs. To achieve this objective, there is a powerful argument for a generic, region-wide endeavor for the development and maintenance of statistical data bases on the social dimension of structural adjustment, the realization of studies on the socioeconomic implications of adjustment and the reinforcement of the institutional capability of governments to identify, design and monitor poverty alleviation programs and projects to be implemented in conjunction with structural adjustment programs.

8. Against this background, the World Bank has launched, in collaboration with the UNDP Regional Program for Africa, the African Development Bank and other multilateral and bilateral institutions, a regional project called the Social Dimension of Adjustments (SDA) Project aimed at strengthening the capacity of governments to integrate the social dimension in the design of their structural adjustment programs. To this end, the SDA Project has been designed to provide support to participating governments to develop their capacity to design and monitor poverty alleviation programs and projects, to assess the impact of structural adjustment programs over time on population groups, and to design and maintain, in the framework of their national systems, adequate statistical data, in particular through the gathering of household data in an integrated manner.

II. LSMS SURVEYS

9. The LSMS was conceived with these broad purposes in mind: first, the collection of integrated data that capture different dimension of levels of living so as to be relevant for policy analysis of relationships between these different dimensions, second, the provision of these data in a timely fashion and third, with an analytical framework to support policy and decision making.

10. A conceptual framework was developed for the policy analysis of levels of living from which the data content of the surveys was derived. The latter was then translated into a questionnaire and a data collection system put in place that was consistent with the conceptual framework and met the aforementioned goals. As such, the living standards surveys have five essential characteristics: (a) the survey instrument takes the form of a multi-topic integrated questionnaire; (b) survey and questionnaire design relies on interaction between data producers and data users from the beginning; (c) the survey explicitly embodies an over-time dimension; (d) quality control is at the forefront of all operations; and (e) data processing is set as an integral part of survey operations.

A. Multi-topic integrated questionnaire

11. Once it is recognized that the concept of levels of living is fundamentally multi-dimensional in nature, it becomes evident that data need to be collected on all, or at least the most important, of these dimensions. In practice, this can be achieved in one of two ways. The first (and most conventional way) is to collect data on each dimension separately through the use of expenditure surveys, labor force surveys, income surveys, health surveys and so on. To be useful for policy analysis, however, these different data must be integrated. This makes it

essential that such data have to come from one master sample of households or, at least, provide sufficient overlap in households covered so that statistical links between the different surveys can be traced and their implications explored. This requires a relatively sophisticated statistical and data processing system, which only a few developing countries possess. Moreoever, such experience as they have had in this area has been generally disappointing. While integration of different surveys was eventually achieved in a few instances, time lags between data collection and data integration exceeded the already long delays typical in the processing of single topic surveys. As a result of such experience, an alternative approach, i.e., doing the integration at the data collection stage, becomes attractive. This includes obtaining information on the different dimensions of levels of living from the same sample of households. The main practical obstacle to this procedure is that it usually entails a lengthy and complicated questionnaire, which in turn requires skilled enumerators and a considerable amount of patience and stamina on the part of enumerators and respondents alike in collection of the information.

12. Integration at the data collection stage was the approach chosen by the living standards surveys (LSS). The choice was primarily based on the negative experience with past alternative approaches and on the recognition that in such approaches the bottleneck hindering speedier data processing and integration was a major lack of processing capability (hardware, software and programmers) which could not be alleviated in the near future, except at prohibitively high cost and with massive investment. In other words, the use of one topic surveys with ex post data integration could not in practice meet the essential LSS requirement of timeliness in data production.

13. Having thus concluded that integration at the collection stage was needed, several steps were taken to reduce the negative features of integrated surveys. First, each module was scrutinized to determine the minimum number of survey questions that would be necessary for analysis of the specific topic in the context of levels of living. Second, the administration of the questionnaire was split in two rounds, two weeks apart. The reason for the split was primarily quality control for the collection of expenditure information, but it also had the considerable side benefit of reducing the length of each interview. Moreover, in the administration of the questionnaire, emphasis was placed on talking with individual respondents in the household when individual information was being asked (i.e., the use of proxy responses was minimized). Thus, the actual time during which a particular household member was interviewed was not unduly long. Nevertheless, the LSS instrument is still relatively complex and requires more than the usual amount of preparation and training of enumerators and supervisors.

B. LSMS surveys: Survey design and implementation

14. Countries in which LSMS surveys have been implemented use a comprehensive set of questionnaires, some of which are modified to fit specific country characteristics. The comprehensive and integrated nature of these questionnaires is demonstrated by the topics covered:

Household Questionnaire

- Housing, both a physical description (including measurement of floor area) and money spent on rent, utilities and other housing related expenses;

- Educational attainment and current school enrollment of household members (including children away from home) and the amount of time spent in school during the past seven days by those currently enrolled;

- Economic activities, including time at work in the past 12 months and past 7 days, money received from work, non-monetary receipts for work, for both primary, secondary and any other jobs, and also information on the search for work or reason why not searching (for those not working), the search for additional or new work (for those now working), work history and work done in the home;

- Migration, as well as reasons for migrating;

- Agriculture and animal husbandry, including information on land owned and land rented or sharecropped, crop by crop acreage and output, expenditures on agricultural inputs, and equipment owned;

- Non-agricultural household businesses, with data on revenues and expenditures for as many as three household-operated businesses;

- Food and non-food expenditures, including food grown and eaten by the household;

- A listing of household durable goods owned;

- Fertility and birth history of one randomly selected woman household member of child-bearing age;

- Income from other sources not already listed above;

- Savings and loans contracted by household members;

- Anthropometric data, i.e., height and weight of all household members.

Community Questionnaire (rural areas only)

- Characteristics of the local economy, with special emphasis on the physical infrastructure (road conditions, electrification, extension work, etc.) types of crops grown and agricultural wage rates;

- Distance to and characteristics of local primary and secondary schools;

- Distance to and availability of local health services.

Price questionnaire

- Local market prices of selected food and non-food items, medicines and agricultural inputs.

15. The survey design has many features which reflect the need to produce high quality data. The sample size chosen is varied depending on country situations, survey capabilities, and degree of precision required. Recent LSMS surveys have added flexibility. An essential feature of survey operations is that survey personnel receive intensive training at the individual level. Rigorous training of all survey personnel consists of four weeks of full day sessions, including two weeks of practice interviews. Supervision of data collection is intense - for most LSMS surveys there is one supervisor for every two interviewers and each completed questionnaire is carefully checked by the supervisors. In addition, every fourth household is reinterviewed by the supervisor to check whether the interviewers are adequately carrying out their duties as given in the training manuals. The two-stage sample design selects groups ("clusters") of households which are interviewed by a team of one supervisor and two interviewers over two separate weeks. For each of these two weeks the team actually stays in the village or urban area so that all selected respondents can be traced and interviewed at times which are convenient for them. The data are checked for consistency and completeness by a computerized data entry program. Any errors detected in the first round require the interviewer to return to the household to resolve inconsistencies and finish incomplete questionnaires.

16. The approach adopted overcomes many of the problems encountered in canvassing household surveys in the past. Long periods of time, often several years, to clean the data and prepare statistical reports has been a constraint. Recent advances in computer technology have created new opportunities for survey design, and LSMS surveys are among the first to take advantage of these advances. In fact, LSMS surveys use personal computers at all stages of survey operations. First, when the questionnaire for a particular country is being designed, all

pages of the questionnaire are written on a PC and stored on diskettes using computer software specially designed for that purpose. Consequently, after initial field testing of prototype questionnaires, the questionnaire can be modified, literally overnight, and these modifications can be tested the next day.

17. Secondly, after the questionnaire is finalized a data entry system is developed that allows for immediate entry of the data from the filled in questionnaire to diskettes. The data entry program is designed to perform many consistency checks at the time of data entry. These checks include simple coding checks, range checks of continuous variables, and more complicated tests on the internal consistency of the data, both within and between questionnaire modules. After the first week in any village, the team returns to regional field offices where the PC is located. During the next week, all the data from the first week's work are entered and checked by the data entry program. The following week the team returns to the same village for a second visit. During this visit, the second part of the household questionnaire is filled out and all errors detected by the data entry program from the first week's work are corrected.

18. Thirdly, with all the data now on diskettes, dissemination of results can take place in a matter of weeks after the last households have been interviewed in the field. For example, the results of the first six months of the Cote d'Ivoire Living Standards Survey were published within two months after the last interviews were completed. Finally, with the continuing advance of the storage capacity of PCs, they are increasingly being used for the subsequent statistical work and data analysis.

C. Countries where LSMS surveys have been or will be implemented

19. The following six countries have already undertaken LSMS surveys.

(i) Côte d'Ivoire: The Côte d'Ivoire Living Standards Survey (CILSS) began in February, 1985, and has now generated four years of data (1985, 1986, 1987 and 1988). Further surveys will be implemented under the SDA program. The Ivorian Government has decided to keep the survey as a permanent component of its annual data collection efforts, thus providing a successful example of institution building component of the LSMS system. The sample size for each year of the CILSS is 1600 households. One interesting aspect of the Côte d'Ivoire Survey is that half the households in any given year are reinterviewed in the following year - this allows for better analysis of changes in living standards over time.

(ii) Ghana: The Ghana Living Standards Survey (GLSS) began data collection in September, 1987, and has now generated two years of data (1987-88, 1988-89). The survey was originally

intended to run for two years but will be extended up to five years under the SDA program. The Government of Ghana is also planning to integrate this survey with a series of more topic specific surveys, including a more detailed consumer expenditure survey. The GLSS sample size is 3200 households per year.

(iii) Mauritania: The Mauritania Living Standards Survey (MLSS) began data collection in December, 1987. By the end of 1988, the first year of data collection was completed. Under the SDA program, the survey will be extended and modified after an assessment of the first year's efforts. Mauritania is an interesting example in that there existed almost no institutional capacity for undertaking household surveys, so that much of the work involved encompassed a general upgrading of the capability of the statistical office in that country. As in Côte d'Ivoire, 1600 households are covered by the MLSS.

(iv) Peru: The Peru Living Standards Survey (PLSS) collected data for a single year from July, 1985 to July, 1986. The sample size was 5000 households. The Government of Peru plans to undertake this survey every 3 to 5 years.

(v) Jamaica: The Jamaican Government implemented the Jamaican Survey of Living Conditions in August, 1988, and finished two rounds of data collection by August, 1989. This survey is designed to monitor the impact of the Jamaica Social Well-Being Programme (now known as the Human Resources Development Programme) over a period of five years.

(vi) Bolivia: The Government of Bolivia began an initial LSMS survey in urban areas in March, 1989. The current work plan of the Bolivian statistical office calls for a full-scale two year program beginning in 1990. The full survey will include 5000 households per year.

20. Plans are now underway to begin LSMS surveys in Morocco and Pakistan, and preliminary discussions have taken place in Brazil, Colombia, Costa Rica, Guatemala, Trinidad and Tobago, Venezuela, Egypt, Jordan, Kenya, Lesotho, China, Laos and Nepal.

D. Assessment of the LSMS in achieving its objectives

21. The goal of the Living Standards Measurement Study continues to be to provide developing countries and the international development community with the means to assess progress in living standards by enabling those countries to produce integrated and comprehensive, high quality data in a timely and cost-effective way. Based on the experience with the surveys in Côte d'Ivoire and Peru, the overall goals of the program have been met. An independent evaluation of the Côte d'Ivoire survey by the International Statistical Institute's Research Center (The Hague, Netherlands) concluded that: "There are some very important

achievements in the planning of this survey, notably in the use of micro-computers to capture the data collected in the field. The speed with which the results have been produced is impressive, and the organizers are very much to be congratulated on the ways in which they have overcome the difficulties which are inherent in the conduct of any major survey in a Third World country. Everything possible should be done to capitalize on the progress that has been made in extending the survey in future years...."

22. Although there were considerable doubts about the feasibility of collecting data from households on a large number of topics from an extended questionnaire, on the grounds of respondent fatigue and resistance to lengthy interviewing, experience to-date has shown that these fears can be overcome. It had also been contended that respondents in many situations would not be able to respond fully to complex questions. Experience in Côte d'Ivoire and Peru, and preliminary evidence from Ghana, indicate that with proper preparation, lengthy and comprehensive household questionnaires can be successfully administered. In the LSMS surveys, after careful pretesting and experimentation, it was established that the questionnaires could be administered through two interviews two weeks apart. The average interview takes about two or three hours for each of the two rounds. Questions on individuals (e.g., labour force activities and income) are addressed to the specific household members, so that in most cases no one person spends more than one hour being interviewed during a given visit to the household, thus overcoming respondent fatigue.

23. Evidence for the degree to which the questionnaire can be completed with the co-operation of the households selected can be seen by examinig refusal rates, i.e., the proportion of the households who refuse to participate in the survey, and by the number of incompletely filled in questionnaires. In the Côte d'Ivoire survey, only 0.9 per cent of households (14 out of 1600 households in 1985 and 15 out of 1600 households in 1986) refused to participate in the survey during the first two years of its implementation. In Peru explicit data were not collected on refusals, so such cases are subsumed in the "other" category regarding the reason why some households did not participate in the the survey. This other "category" amount to 5.4 per cent of the households (275 out of a sample size of 5000) chosen. In Ghana, on the basis of data for the first seven months of the survey, the refusal rate is less than 1.0 per cent.

24. Further evidence on the ability to complete a long questionnaire comes from the amount of "missing" data from those households for which a questionnaire was completed. In the Peru and Côte d'Ivoire surveys there were only a few instances of missing data - of the items tabulated, the percentage of missing data is never larger than two percentage points, and is usually

less than one tenth of a percent. The intensive training of interviewers and supervisors, and the use of the computerized data entry system, which flags all instances of missing data and instructs the supervisor to have the interviewers return to the household to complete the questionnaire, clearly is beneficial. Obtaining anthropometric measurements on all household members, since some household members may be travelling or not at home for other reasons when the interviews are done, is perhaps the most difficult part of the operation. Yet by assigning a separate team member to undertake this task, the anthropometrist, almost 90 per cent of household members were measured in Côte d'Ivoire.

25. Data quality has been achieved because of the degree to which interviewing is controlled. With one supervisor for every two interviewers, and the data entry program checking not only for missing data but also for implausible or inconsistent data and return visits to the household to obtain accurate responses, it has been possible to maintain quality control. For example, if a child measured by the anthropometrist during the first visit is unusually short or tall for his age, the data entry program flags this and directs the anthropometrist to measure the child again at the next visit. Table 4 reveals that the Living Standards Surveys done in Côte d'Ivoire and Peru had very few cases of inconsistent data after return visits were made to correct errors detected by the data entry program. Another step taken to assure data quality requires that the supervisors themselves are supervised by surprise visits from the core survey team throughout the year. However, the ultimate validation of the data lies in comparisons with data gathered from other sources to see whether the two sources are consistent.

26. Several such checks have been made on the Côte d'Ivoire data which testify to the high quality of the data:

(i) Comparison of aggregate national consumption figures from World Bank estimates of national accounts for 1985 with consumption data (expenditures plus consumption of food produced and consumed by the household) from the first year of the survey are within 5 per cent of each other. Much of the 5 per cent difference probably arises from differences in the coverage of consumption, and sampling errors.

(ii) The area of land planted under various crops, in terms of the proportion of total land area planted matches well with the data from the Ivorian Government's 1981 Agricultural Sector report.

(iii) Data on fertility from the CILSS are very similar to those gathered in the 1980-81 World Fertility Survey conducted in Côte d'Ivoire which used a much larger sample of women.

27. Cost effectiveness of LSMS surveys has been an important consideration. The major recurrent costs involved in LSMS surveys are the salaries of the team members (a typical team has one supervisor, two interviewers, one anthropometrist, one data entry operator and one driver), the maintenance of a vehicle and a personal computer (PC) for each team and the printing of questionnaires and manuals. The recurrent costs per year (including personnel costs of all field teams plus a management team) were approximately $200,000 in Côte d'Ivoire during the first two years and are estimated at about $350,000 per year in Ghana (note that the sample size in the latter survey is twice that of the former). Initial setup costs include the purchase of new vehicles, if none are presently available, of personal computers, of anthropometric measuring equipment and a few smaller items. Obviously, these setup costs depend heavily on the existing survey infrastructure of the country. Cost comparisons are often difficult to make, and have not been made. However, in terms of the wealth of information collected and the vast improvement in timeliness of the data, the costs are considered reasonable. In brief, the costs of an LSMS survey compare favourably against conventional single topic surveys when these factors are taken into account.

E. Adaptability of LSMS surveys to other countries: transferability and flexibility

28. The main issue of adapting LSMS survey technology to other countries concerns the modification of existing LSMS household, community and price questionnaires to meet the needs of another country. Questions which are relevant in one country may have little meaning in another, and new questions may have to be developed to gather data relevant to the countries concerned. Finally, as certain government policies and programs may be of special interest, questions may be asked with specific references to such programs. In each survey for Bolivia, Jamaica and Mauritania, such modifications were made. In the more recent surveys, the part of the household questionnaire dealing with agriculture and self-employment income were subjected to major revision. Minor changes were also made to other sections of the questionnaires.

29. The computer programs that create pages of the questionnaires allow for quick adaption of existing questionnaires to new countries, further demonstrating the flexibility of LSMS technology. Starting LSMS survey in a new country is of course considerably facilitated if a survey infrastructure exists. In such circumstances, the survey can be integrated into an existing survey program. Prior survey

experience can be drawn upon to speed up the transfer process as well as maintain the quality of the entire exercise. Even in situations, as in the case of Mauritania, where survey capability has to be built up from almost nothing, the lead time is less than a year.

F. Policy analysis

30. A wide array of policy oriented research and reports have been carried out using the data from Côte d'Ivoire and Peru. The first output from both the Côte d'Ivoire and Peru surveys were statistical abstracts produced jointly by the respective national statistical offices and the World Bank.

31. Following the statistical abstract, among the most important papers to initially appear are detailed profiles of the distribution of welfare, as measured by consumption expenditures, for each country. These have already been completed for Côte d'Ivoire and Peru. Such studies are then followed by more specific papers on a variety of topics. To-date a total of 52 working papers have been issued. Copies are available from the Bank. Topics include the possible effect of policies on the poor, the effect of instituting user fees on use of medical care services and school enrolment, productivity of labour in the informal (self-employment) sector, the causes of poor nutritional status of children, and the role of women in labour markets. Some of this research is currently being used by governments and by international organizations in designing more effective sectoral and national development policies.

G. Future plans

32. Further work is being done on several fronts by the LSMS Unit in the Bank's Population and Human Resources Department to improve LSMS methodology and facilitate its dissemination. Additional documentation is being developed to explain in detail various aspects of LSMS technology in order to provide the international statistical community with information on how they can undertake LSMS surveys in their own countries. Second, renewed attention is being given to how LSMS surveys can be integrated into existing survey programs, such as the United Nations' National Household Survey Capability Program (UNNHSCP). Third, dialogue is continuing with the academic and development community on improving policy analysis with LSMS data, so that the quality of research using these surveys can be improved and the data collected are of the type required by economists and other researchers to undertake methodologically rigorous policy oriented research.